

Selective One-Way Wrench

Field of Invention

The present invention relates to a selective one-way wrench.

Background of Invention

Referring to Figure 10, a conventional selective one-way wrench 110 includes a handle 114, an annular head 115, an annular gear 120, a pawl 130 and a switch 140. The annular head 115 is formed at an end of the handle 114, the annular head 115 defines a first space 111, a second space 112 communicated with the first space 111 and a third space 113 communicated with the second space 112. The annular gear 120 is rotationally put in the first space 111. The annular gear 120 includes a toothed external face 121 formed thereon and a toothed internal face 122 for engagement with a bolt or nut. The pawl 130 is put in the second space 112. The pawl 130 includes a toothed side 131 formed thereon. The switch 140 is rotationally put in the third space 113 of the handle 114 and partially put in the second space 112 for bringing the toothed side 131 of the pawl 130 into engagement with the toothed external face 121 of the annular gear 120.

Summary of Invention

The primary objective of the present invention is to provide a selective one-way wrench.

1 A selective one-way wrench includes an annular head, a gear, a pawl, a
2 transmission and a switch. The annular head defines a first space, a
3 second space communicated with the first space and an aperture
4 communicated with the second space. The gear is rotationally put in the
5 first space. The gear includes a toothed face. The pawl is put in the
6 second space. The pawl includes a toothed side for engagement with the
7 toothed face of the gear. The transmission is rotationally put in the
8 second space. The transmission includes three protrusions selective one
9 of which is put between the rods of the pawl so that the transmission can
10 move the pawl. The switch is put into the second space through the
11 aperture for connection with the transmission.

12
13 Other objects, advantages, and novel features of the invention will
14 become more apparent from the following detailed description when
15 taken in conjunction with the attached drawings.

16
17 **Brief Description of Drawings**

18 The present invention will be described through detailed illustration of
19 embodiments referring to the attached drawings.

20
21 Figure 1 is a perspective view of a selective one-way wrench according to
22 a first embodiment of the present invention.

23
24 Figure 2 is an exploded view of the selective one-way wrench shown in
25 Figure 1.

1 Figure 3 is a cross-sectional view of the selective one-way wrench of
2 Figure 1.

3

4 Figure 4 is a cross-sectional view taken along a line 4-4 in Figure 3.

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6 Figure 5 is a cross-sectional view taken along a line 5-5 in Figure 3.

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8 Figure 6 is similar to Figure 4 but shows the selective one-way wrench in
9 a position for driving a bolt or nut counterclockwise.

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11 Figure 7 is similar to Figure 5 but shows the selective one-way wrench in
12 a position for driving a bolt or nut counterclockwise.

13

14 Figure 8 is an exploded view of a selective one-way wrench according to
15 a second embodiment of the present invention.

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17 Figure 9 is an exploded view of a selective one-way wrench according to
18 a third embodiment of the present invention.

19

20 Figure 10 is an exploded view of a conventional selective one-way
21 wrench.

22

23 **Detailed Description of Embodiments**

24 Referring to Figure 1, according to a first embodiment of the present
25 invention, a selective one-way wrench 10 includes a handle 18 and an
26 annular head 11 from which the handle 18 projects.

1 Referring to Figure 2, the annular head 11 defines a circular space 12, a
2 crescent space 13 communicated with the circular space 12 and an
3 aperture 15 communicated with the crescent space 13. An annular
4 groove 14 is defined in a wall of the circular space 12. A recess 17 is
5 defined in the wall of the crescent space 13. An annular groove 16 is
6 defined in the wall of the aperture 15.

7

8 A spring 68 and a rod detent 66 are put in the recess 17.

9

10 A pawl 20 is put in the crescent space 13. The pawl 20 includes two
11 ends, a top, a bottom, a toothed side 22 and an arched side. Two rods 24
12 are formed on the top. Three recesses 25, 26 and 27 are defined in the
13 arched side.

14

15 A transmission 70 is put in the crescent space 13 after the pawl 20. The
16 transmission 70 includes a recess 76 defined in the top and three
17 protrusions 72, 74 and 78 extending from a side. The protrusion 78 is
18 located between the protrusions 72 and 74.

19

20 An annular gear 40 is put in the circular space 12. The annular gear 40
21 includes a toothed internal face 42 for engagement with a bolt or nut and
22 a toothed external face 41 for engagement with the pawl 20.

23

24 The O-ring 50 is rotationally put on the annular gear 40. The O-ring 50
25 is put in the circular space 12. The O-ring 50 includes an annular
26 groove 51 defined in an external face thereof. A C-ring 52 includes an

1 internal edge put in the annular groove 51 and an external edge put in the
2 annular groove 14. Thus, the O-ring 50 is firmly attached to the annular
3 head 11 by means of the C-ring 52.

4
5 A switch 30 is put in the aperture 15. The switch 30 includes a lever 31,
6 a shaft 32 extending from the lever 31, a ridge 33 extending from the
7 shaft 32 and an annular groove 34 defined in the shaft 32. The ridge 33
8 is inserted into the recess 76 through the aperture 15. The switch 30 can
9 drive the transmission 70 so that the protrusion 72 or 74 is engaged with
10 rods 24.

11
12 A C-ring 35 includes an internal edge put in the groove 34. The C-ring
13 35 includes an external edge put in the annular groove 16. Thus, the
14 switch 30 is firmly attached to the annular head 11 by means of the C-ring
15 35.

16
17 Referring to Figures 3 to 5, the switch 30 is in a neutral mode. The
18 protrusion 78 is put between the rods 24. The rod detent 66 is put in the
19 recess 26 so as to keep the switch 30 in the neutral mode.

20
21 Referring to Figures 6 and 7, the switch 30 is moved to a first working
22 mode. The switch 30 is rotated clockwise. The transmission 70 is
23 moved accordingly. The protrusion 78 is moved from the rods 24.
24 Instead, the protrusion 74 is put between the rods 24. The pawl 20 is
25 moved into a right-hand end of the crescent space 13 so that the rod dent
26 66 enters the recess 27. The annular head 11 can drive the annular gear

1 40 counterclockwise, but not vice versa.

2
3 Although not shown, the switch 30 can be moved to a second working
4 mode. The switch 30 is rotated counterclockwise. The transmission
5 70 is moved accordingly. The protrusion 78 is moved from the rods 24.
6 Instead, the protrusion 72 is put between the rods 24. The pawl 20 is
7 moved into a left-hand end of the crescent space 13 so that the rod dent
8 66 enters the recess 25. The annular head 11 can drive the annular gear
9 40 clockwise, but not vice versa.

10
11 Figure 8 shows a selective one-way wrench 10 according to a second
12 embodiment of the present invention. The second embodiment is
13 identical to the first embodiment except for including a pawl 90 instead of
14 the pawl 20 and a transmission 80 instead of the transmission 70. The
15 pawl 90 is identical to the pawl 20 except for including three protrusions
16 92, 96 and 98 on an arched side instead of the rods 24 on the top. The
17 transmission 80 is identical to the transmission 70 except for including
18 two rods 82 on a bottom instead of the protrusions 72, 74 and 78 on the
19 side.

20
21 Figure 9 shows a selective one-way wrench 10 according to a third
22 embodiment of the present invention. The third embodiment is identical
23 to the first embodiment except for replacing the annular gear 40 with a
24 joint 60. The joint 60 includes a hollow insert 61, a detent 62 movably
25 put in the hollow insert 61 and a control element 63 movably put in the
26 hollow insert 61 for pushing the detent 62 from the hollow insert 61.

1 The present invention has been described through detailed illustration of
2 three embodiments. Those skilled in the art can derive variation from
3 the embodiments without departing from the scope of the present
4 invention. Therefore, the embodiments shall not limit the scope of the
5 present invention defined in the claims.

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